

Document ID:



10794

Incoming Magnet Repair Inspection/Survey

318898 / Rev. D

Job No: 442
MSD Project/Task No.: 30/30.13.4.6
M + S Project/Task No.: 30/30.13.4.6

Place This Side Down For Scanning!!!



Rework/Inspection Travelers

LNQA2401-0

Document ID:



10794

Job No.:



442

Project/Task No.



30/30.13.4.6

Series:



LNQA

Serial No:



LNQA2401

Rework ID:



0

Specification No.:



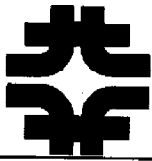
318898

Revision:



D

LNQA2401-0



**Fermi National Accelerator Laboratory
Batavia, IL 60510**

**Conventional Magnet/Device
Incoming Magnet Repair Inspection/Survey**

Reference Drawing(s):

Project # Task #: 30/30.13.4.6

Job #: 442

Released by: Jan Szal

Magnet/Device Series: LNQA

Date: 2/3/2009 4:03:41 PM

Scan Pages:

Prepared by: B.Jensen

Title	Signature	Date
TD / Process Engineering	Bob Jensen Bob Jensen / Designee	12/5/07
TD / E&F Assembly Supervisor	Dan Smith Dan Smith / Designee	12/5/07
TD / E&F Production Physicist	George Velez Gueorgui Velez / Designee	12/5/07

Incoming Magnet Repair / Inspection Survey

Magnet / Device Serial No.: LNQA2401-0

Note(s): AKA: LQ2401, #001P

Revision Page

Revision	Step No.	Revision Description	TRR No.	Date
None	N/A	Initial Release	N/A	6/30/95
A	3.2	Transferred from Mac to PC format. Inserted a Radiation and Lead Paint Survey. Changed cover page approval list.	0945	2/3/00
B	Cover	Corrected spelling of Devise to Device.	1231	9/18/01
	4.2	Add a no 'Removal/Replacement.. check box.		
	4.5	Changed 'No Damage Noted' to 'If No Damage is noted, check no damage box. Added check box		
	4.6	Added a no water path check box, added if no water path, check box.		
	6.1	Add a no water path check box, added if no water path, check box.		
	6.2	Added a no water path check box, added if no water path, check box		
	8.1	Added check box, 'No MFA/CAC Action Required.'		
	10.1	Deleted step, 'O.K. to proceed' tag, not used		
C	2.2	Update DSR	1600	1/28/04
	7.2	Update DSR		
D	CvrPge	Updated to new format	1944	12/5/07
	RevPge	Updated to new format		
	2.2	Updated: Added check boxes.		
	3.0	New: Physically check all bolts holding magnet cores.....		
	5.1	Removed: Step was redundant (serial number on btm of page).		
	5.2	Added: Checkboxes to indicate Acceptable or Damaged		
	5.2	Changed: Sign-off to Inspector instead of Technician		
	5.3	Removed: Acquire previous data (data readily available OnBase)		
	7.1	Added: Upper and Lower Magnet flow check		
	7.2	Added: Upper and Lower Hydro check with Pass/Fail boxes.		
	8.2	Updated: Added check boxes		
	9.0	Updated to new format		

Incoming Magnet Repair / Inspection Survey

Magnet / Devise Serial No.: LNQA2401-0

Note(s): AKA: LQ2401, #001P

Ensure appropriate memos and specific instructions are placed with the traveler before issuing the sub traveler binder to production.

1.0 General Notes

- 1.1 White (Lint Free) Gloves (Fermi stock 2250-1800) or Surgical Latex Gloves (Fermi stock 2250-2494) shall be worn by all personnel when handling all product parts after the parts have been prepared/cleaned.
- 1.2 All steps that require a sign-off shall include the Technician/Inspectors first initial and full last name.
- 1.3 No erasures or white out will be permitted to any documentation. All incorrectly entered data shall be corrected by placing a single line through the error, initial and date the error before adding the correct data.
- 1.4 All Discrepancy Reports issued shall be recorded in the left margin next to the applicable step.
- 1.5 Personnel shall perform all tasks in accordance with current applicable ES&H guidelines and those specified within the step.
- 1.6 Cover the product/assembly with Green Herculite (Fermi stock 1740-0100) when not being serviced or assembled.

2.0 Parts Kit List

2.1 No Parts Kit List required.

2.2 Update DSR.

Update DSR Keywords

Location

Location Verified Date

Status

Make entry regarding work performed.

☒
☒
☒
☒
☒


Lead Person

2-4-09
Date

Incoming Magnet Repair / Inspection Survey

Magnet / Device Serial No.: LNQA2401-0

Note(s): AKA: LQ2401, #001P

3.0 Magnet Safety Check prior to Truck Un-loading

- 3.1 Physically check all bolts holding magnet cores together are finger tight. If any bolts are loose, acquire proper dwg/torque values and Production tighten all bolts to the proper torque value.

Note: Prior to tightening the bolts, ensure that the keyway stock is installed and the cores/keyway stock are in the correct alignment position.

Record torque value 147 ft/lbs

☐ Welded Magnet, no action needed!

[Signature]
Inspector(s)

2-4-09
Date

VIA D.G.
Technician(s)

2-5-2009
Date

4.0 Hazard Survey

- 4.1 Perform a Radiation Survey and record results below. Describe Location and Level of any "HOT" spots.

mR @ 1 Foot

None Radioactive

Note(s):

If device is more than Radiation Class 1, reject acceptance of the device, unless there is written authorization from the Section Head.

If written authorization is given attach to the traveler.

Technician(s)

J. Sengam

Date

2-04-09

- 4.2 Send a sample of the paint to ES & H for lead testing, unless previously cleared by ES & H



No Lead
ES & H Approved



Lead Based Paint
Follow Precautions Below

NO PAINT REMOVED

Technician(s)

D. G. AuNIA

Date

2-5-2009

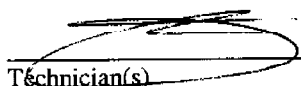
Incoming Magnet Repair / Inspection Survey

Magnet / Device Serial No.: LNOA2401-0Note(s): AKA: LQ2401. #001P

5.0 Visual Inspections

- 5.1 Attach the "REMOVAL/REPLACEMENT/REPAIR OF A.D. COMPONENTS" sheet or equivalent documentation to this traveler.

☒ No 'Removal/Replacement/Repair of A.D. Components' and/or equivalent documentation received.


Technician(s)

2-4-09
Date

- 5.2 Perform a visual inspection of the magnet/cores from the listed items below. The below list is not all inclusive. Note any damage, missing parts, or other abnormalities below, whether from the below list or not.

Note: Any damage, missing parts or other abnormalities noted should be reported to the Production Supervisor immediately, followed up by a Discrepancy Report.!

	<u>Acceptable</u>	<u>Damaged</u>	<u>N/A</u>
Magnet Cores	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coil Leads/Manifold/Ceramics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coil Ends, Return	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coil Ends, Lead	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Potting Cover, Lead End	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Potting Cover, Return End	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beam Tube	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Beam Tube Flanges/Bellows	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Any recorded damage shall be specifically photographed and photos attached to this traveler.

WELDED CORE


Inspector(s)

2-4-09
Date

Incoming Magnet Repair / Inspection Survey

Magnet / Device Serial No.: LNQA2401-0

Note(s): AKA: LQ2401, #001P

6.0 Electrical Inspection

- 6.1 Perform a Resistance (R), Inductance (Ls), and 'Q' electrical inspection and record the results below.

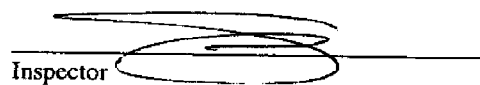
WADDED CORE

Equipment Serial No. <u>32-1515, 24618</u>					
	Resistance	Ls @ 1KHz	Q @ 1KHz	Ls @ 100Hz	Q @ 100Hz
Upper Half					
Lower Half					
Total Magnet	<u>49.3mΩ</u>	<u>1.08mH</u>	<u>19</u>	<u>165mH</u>	<u>7.7</u>

Inspector Date 2-4-09

- 6.2 Hipot the Magnet.

Equipment Serial No. <u>AR0503</u>			
500 Volts with < 5μA	Total Magnet	Upper Half	Lower Half
Coil to Core	<u>< 1μA</u>		
Coil to Beam Tube			
Core to Beam Tube			

Inspector Date 2-4-09

- 6.3 Perform Ring Test at 100 Volts. Attach the Ring Test results to the back of this traveler.

Inspector Date 2-4-09

Incoming Magnet Repair / Inspection Survey

Magnet / Devise Serial No.: LNQA2401-0Note(s): AKA: LQ2401, #001P

7.0 Flow Test and Hydro

- 7.1 Perform a flow test at a ΔP of 60 psi and 100 psi as per the Mechanical (flow) Inspection (ES-318968)

☐ No Water Cooling Passages.

	INNER	OUTER	
	Upper Magnet	Lower Magnet	Full Magnet
ΔP of 60 psi	10.2 gpm	10.1 gpm	gpm
ΔP of 100 psi	13.0 gpm	13.3 gpm	gpm

Note(s): Include a diagram of the water input and output test locations, and what part of the magnet is being tested.

D. G. Au

Inspector

2-6-2009

Date

- 7.2 Perform a hydro static check of the manifold/coil system at 500 psi for 30 minutes.

☐ No Water Cooling Passages.

	Upper Magnet		Lower Magnet		Full Magnet	
	Pass	Fail	Pass	Fail	Pass	Fail
500 psi/30 mins	X		X			

D. G. Au

Inspector

2-6-2009

Date

8.0 Beam Tube Vacuum Inspection

8.1 Perform a vacuum leak check on the Beam Tube.

Check box if no Beam Tube is installed in the Magnet.

☒

PART NO.	DATE TIME	OPERATOR'S LAST NAME	SCALE UNITS BEFORE HELIUM PROBE	SCALE UNITS WHILE ENCLOSURE FLOODING	DETERMINATION OF MINIMUM DETECTABLE LEAK			
					MDS ÷ ((Response - Bckgnd) ÷ Leak Value) = MDL			

D. GAW
Inspector

2-5-2009
Date

8.2 Update the DSR.

Update DSR Keywords

Location

Location Verified Date

Status

Make entry regarding work performed.

☒
☒
☒
☒
☒

D. GAW
Lead Person

2-9-2009
Date

8.3 Photograph the magnet, and store in OnBase.

D. GAW
Inspector

2-9-2009
Date

9.0 Production Complete

- 9.1 Process Engineering verify that the Traveler is accurate and complete. This shall include a review of all steps to ensure that all operations have been completed and signed off. Ensure that all Discrepancy Reports and dispositions have been reviewed by the Responsible Authority for conformance before being approved.

Comments:

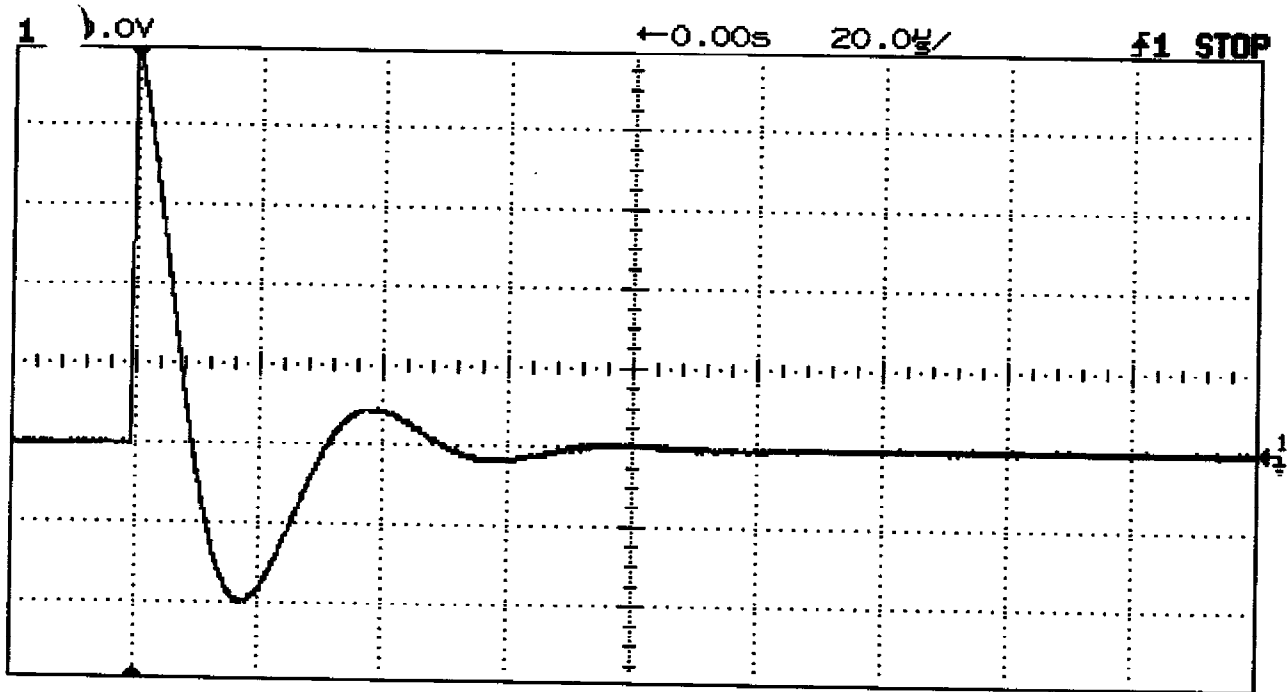


Process Engineering/Designee

2-9-09

Date

12:22:09 Wed Feb 4, 2009



	State	Volts/Div	Position	Cplg	BW Lim	Inv	Probe
C 1	On	20.00 V	-20.00 V	DC	Off	Off	10:1
Chan 2	Off	100.0mV	0.000 V	DC	Off	Off	1:1

	Mode	Main Time/Div	Main Delay	Time Ref	Delayed Time/Div	Delayed Delay
Horizontal	Normal	20.00us/	0.000 s	Left	-----	-----

Trigger Mode	Source	Level	Holdoff	Slope	Couplg	Reject	NoiseRej
Normal	Ch 1	5.000 V	200.0ns	Pos	DC	HF	On

Display Mode: Normal

Traveler	318898
Step #	6.3
Magnet Serial Number	LNQA 2401-0
Technician	3.2
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